

Appln No. 09/922,275  
Amdt. Dated February 23, 2004  
Response to Office action of December 11, 2003

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**Amendments to the Claims:**

Amend the claim set, without prejudice or disclaimer of the subject matter thereof, as detailed in the following complete listing of all claims:

**Listing of Claims:**

1. (Currently amended) An image printing apparatus that comprises:
  - a print head for printing images; and
  - a microcontroller having VLIW processor circuitry that comprises:
    - a wafer substrate;
    - processor circuitry that is positioned on the wafer substrate;
    - print head interface circuitry that is positioned on the wafer substrate and is connected between the processor circuitry and the print head, the print head interface circuitry being configured to facilitate communication between the processor circuitry and the print head, whereby the print head interface circuitry is connected to a buffer memory that, in turn, is connected to the processor circuitry, the print head interface circuitry being configured to receive a print image from the processor circuitry via the buffer memory and to pass the print image to the print head; and
    - bus interface circuitry that is discrete from the print head interface circuitry and is connected to the processor circuitry so that the processor circuitry can communicate with devices other than the print head via a bus.
2. (Currently amended) An image printing apparatus that comprises:
  - a page width print head that is the product of an integrated circuit fabrication technique and which includes a plurality of nozzle arrangements, each nozzle arrangement defining a micro electromechanical device that is capable of being actuated to eject ink from a nozzle chamber of the nozzle arrangement; and
  - a microcontroller having VLIW processor circuitry that comprises:
    - a wafer substrate;
    - processor circuitry that is positioned on the wafer substrate;
    - print head interface circuitry that is positioned on the wafer substrate and is connected between the processor circuitry and the print head, the print head interface circuitry being configured to facilitate communication between

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the processor circuitry and the print head, whereby the print head interface circuitry is connected to a buffer memory that, in turn, is connected to the processor circuitry, the print head interface circuitry being configured to receive a print image from the processor circuitry via the buffer memory and to pass the print image to the print head; and

bus interface circuitry that is discrete from the print head interface circuitry and is connected to the processor circuitry so that the processor circuitry can communicate with devices other than the print head via a bus.

3. (Canceled)
4. (Original) An image printing apparatus as claimed in claim 2, in which the print head interface circuitry is configured to define a number of registers for storing clocking and control information to be received by the print head in accordance with a predetermined algorithm.
5. (Original) An image printing apparatus as claimed in claim 4, in which the print head interface circuitry is connected to an address and data bus that, in turn, is connected to a central processing unit (CPU) of the microcontroller so that the CPU can address the registers defined by the print head interface circuitry with said clocking and control information.
6. (Currently amended) An image printing apparatus as claimed in claim 4, in which the ~~print head interface circuitry is connected to a buffer memory that, in turn, is connected to the processor circuitry, the print head interface circuitry being configured to receive a print image from the processor circuitry via the buffer memory and to pass the print image to the print head~~ receives the print image in accordance with said clocking and control information.

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7. (Currently amended) A microcontroller for an image printing apparatus, the microcontroller having VLIW processor circuitry and comprising:

a wafer substrate;

processor circuitry that is positioned on the wafer substrate;

print head interface circuitry that is positioned on the wafer substrate and is connected between the processor circuitry and the print head, the print head interface circuitry being configured to facilitate communication between the processor circuitry and the print head, whereby the print head interface circuitry is connected to a buffer memory that, in turn, is connected to the processor circuitry, the print head interface circuitry being configured to receive a print image from the processor circuitry via the buffer memory and to pass the print image to the print head; and

bus interface circuitry that is discrete from the print head interface circuitry and is connected to the processor circuitry so that the processor circuitry can communicate with devices other than the print head via a bus.